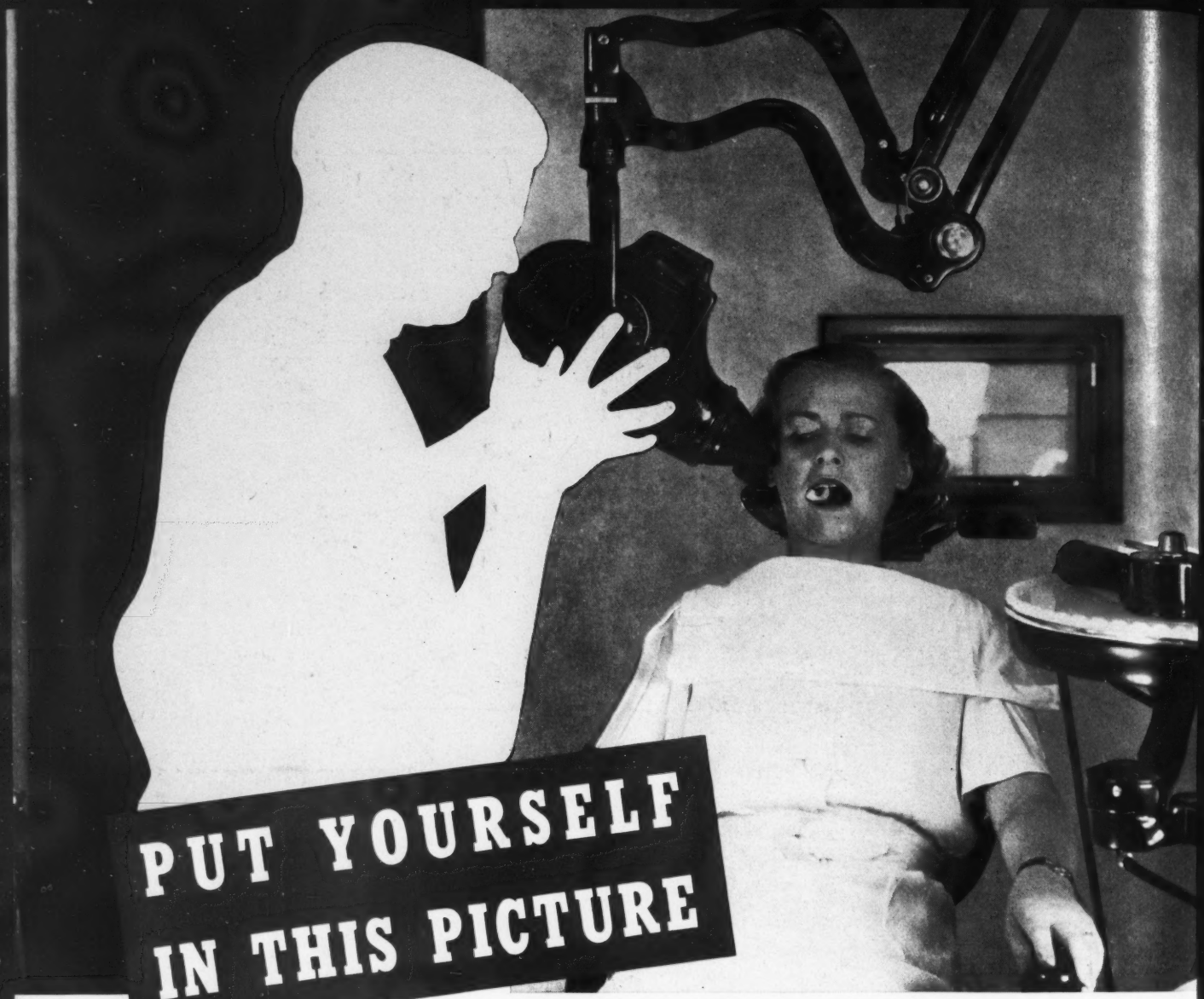
THE DENTAL DIGEST

NOVEMBER, 1937



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SEE PAGE 564 FOR SUBSCRIPTION DATA, ETC.

Individual Metal Trays

LEONARD S. FLETCHER, D.D.S., Castle Shannon, Pennsylvania

POOR ADAPTATION of a denture to the oral tissues may be traced in many cases to the use of a poorly fitting tray during impression taking. The more evenly the impression material is distributed over the tray, with not too much bulk, the better will the impression be. With a tray that fits well, such as a cast individual tray[1] or the individual metal tray (the technique for which is shown in this article) the retention, especially of the lower dentures, may be increased approximately 25 per cent.

[1]Fletcher, L. S.: Cast Individual Impression Tray, DENTAL DIGEST, 42:272 (August) 1936.

Technique

1. Take a good compound impression which will include the entire area that the completed denture should cover, trimming the excess compound that extends beyond 2 mm. into movable tissue (Fig. 1). The peripheral extension of the rim of the denture is outlined in pencil (Figs. 2 and 3).

2. Adapt a baseplate over the snap cast extending it to the pencil outline (Figs. 4 and 5).

3. Melt some low-fusing metal; then allow it to cool until it begins to flow. (Melting point of the metal should be approximately 150° F.)

4. Heat a heavy wax spatula; scoop out the melted metal; stack it directly over the adapted baseplate, and mold to place with the thumb and fingers (Figs. 6 and 7).

5. After the baseplate has been completely covered with the metal to a depth of 2 mm., heat a small soldering iron and smooth the metal until there is an even thickness over the baseplate (Fig. 8).

6. Chill the metal; remove it with the baseplate from the snap cast, and then strip the baseplate from the metal (Fig. 9). Trim the excess metal with a rubber wheel on the labora-

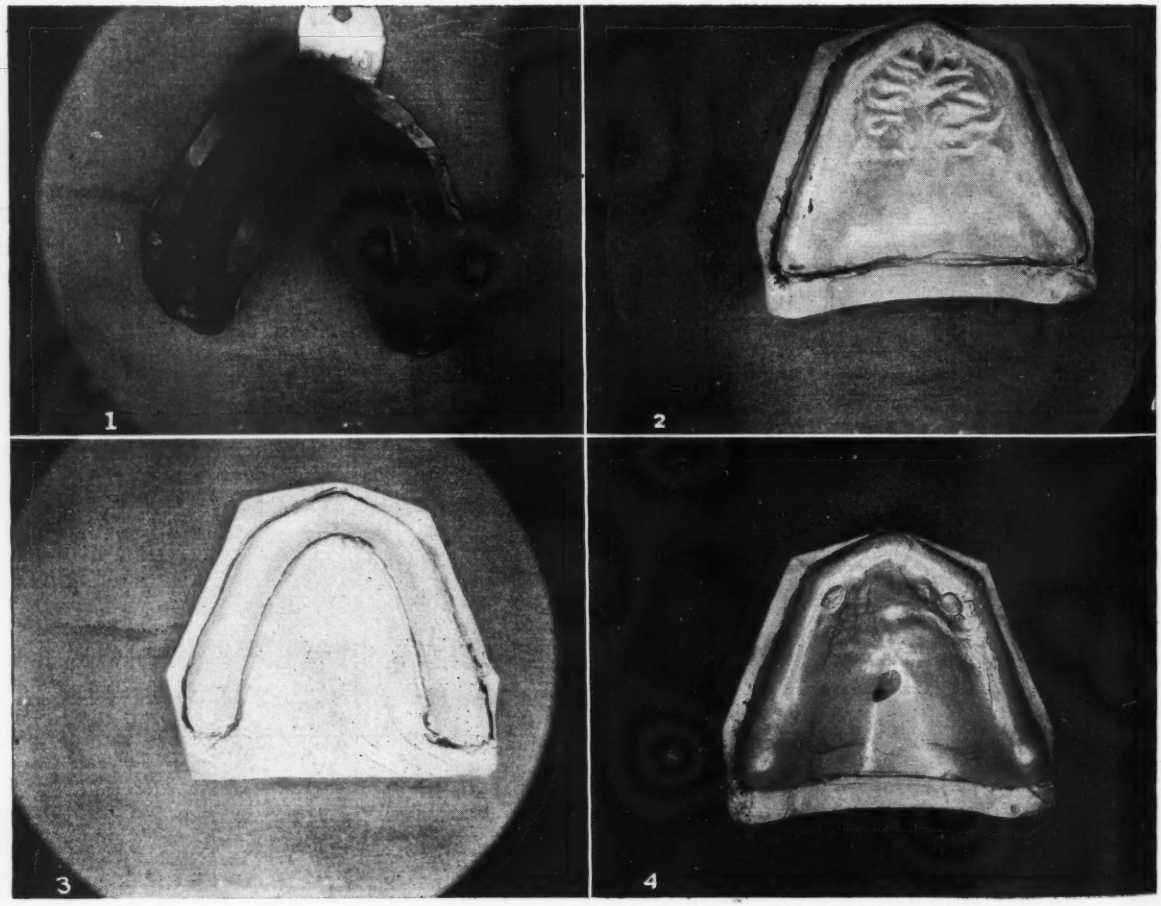


Fig. 1—Snap compound impression showing where the overextended rim of the left side has been trimmed.

Figs. 2 and 3—Snap cast showing outline of baseplate extension.
Figs. 4 and 5—Baseplate extended to the pencil outline.

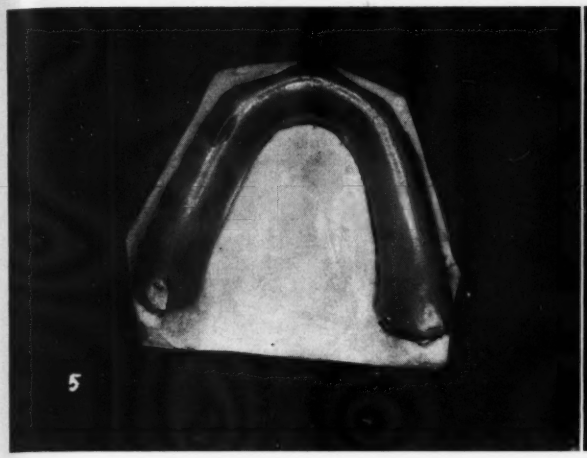


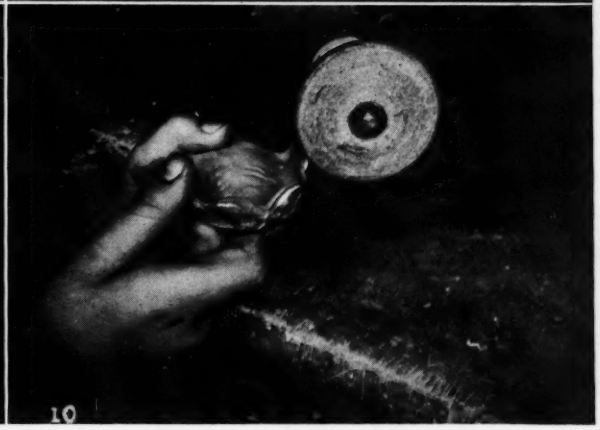
Fig. 6—Melted metal is being scooped from the ladel with a wax spatula and stacked on the baseplate.

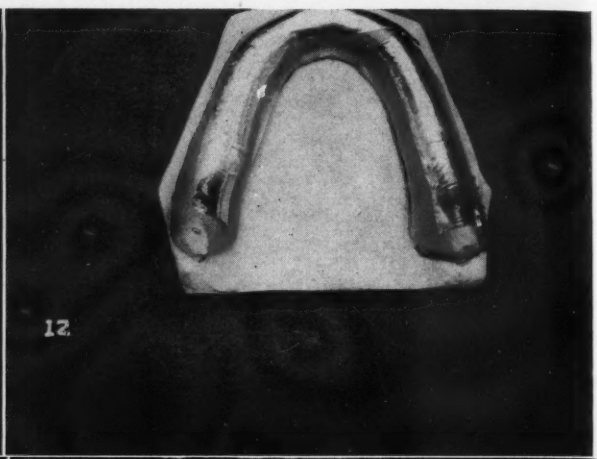
Fig. 7—Soft metal is being molded to place on the baseplate.

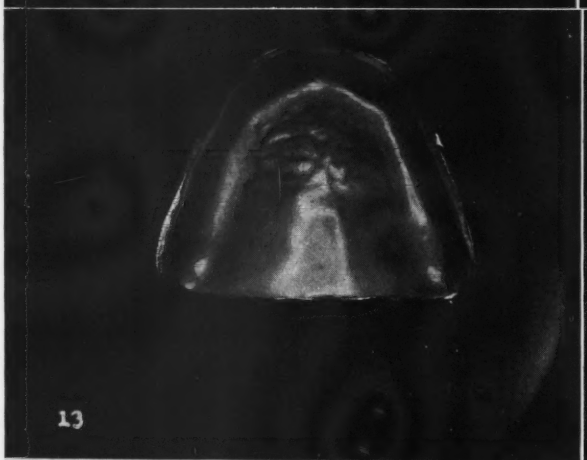
Fig. 8—Metal is being spread evenly over the baseplate with a small, hot soldering iron to a depth of 2 mm.

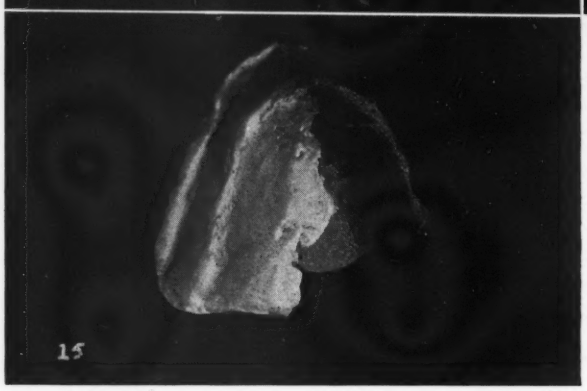
Fig. 9—Baseplate is being stripped from the metal tray.

Fig. 10—Over-extension of baseplate and metal being removed with a rubber wheel.









Figs. 11 and 12—Vault of upper and crest of lower ridge have been cut from baseplate and replaced with tin foil. The metal is now molded over baseplate and tin foil. Baseplate and tin foil are now removed; tray is muscle-trimmed and postdammed, and then completed with an impression paste or a thin plaster wash.

Figs. 13 and 14—Baseplate has been reinforced with metal tray.

Fig. 15—The tray has been muscle-trimmed and postdammed, and half the tray covered with an impression paste.

tory lathe (Fig. 10). The metal tray thus obtained fits well and does not spring under biting stress. The tray is not bulky; it is of a definite size, and will permit the impression material to be carried where it is needed. The thickness of the impression material is governed by the thickness of the baseplate, which has been adapted to the snap cast. This metal tray can be made in less time than the time required to adapt a stock tray correctly.

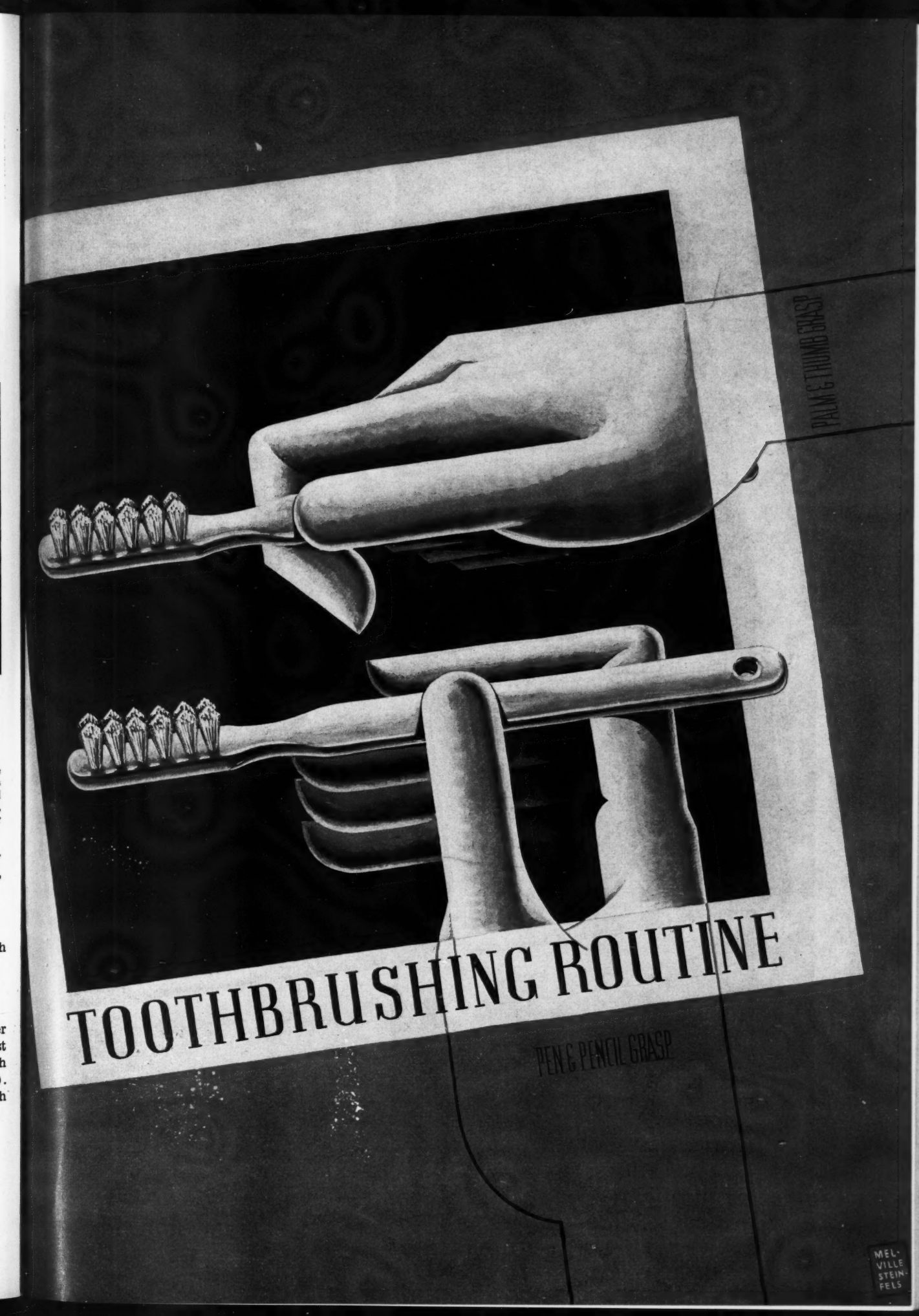
7. The impression is now taken with the impression material of choice as all impression materials will adhere firmly to the tray.

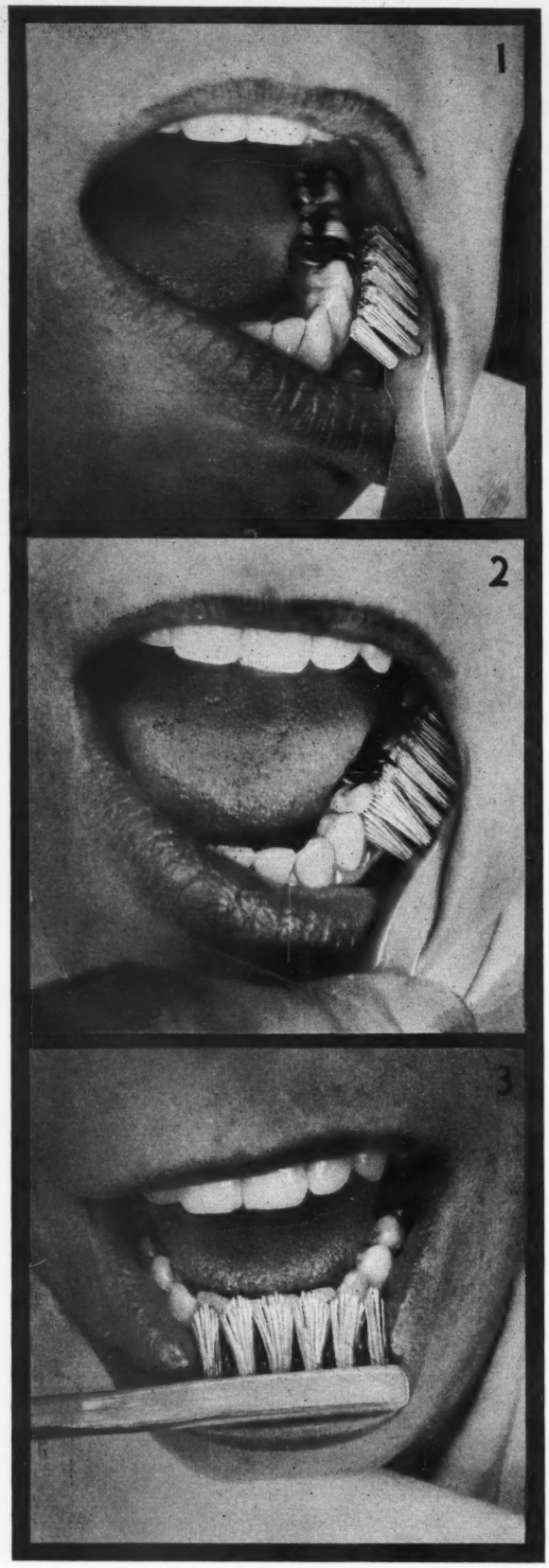
8. The same technique is used to make a tray for an immediate denture, except that two or three thicknesses of baseplate are adapted over the remaining teeth on the snap cast which will allow for a bulk of hydrocolloid material around the teeth when taking the final impression.

Substitute Technique for Steps 2 to 5 Inclusive

The baseplate may be cut out over the vault of the upper and the crest of the lower ridge, and replaced with a heavy tin foil (Figs. 11 and 12). Cover this baseplate and tin foil with

(*Continued on page* 535)


PALM & THUMB GRASP
TOOTHBRUSHING ROUTINE
PEN & PENCIL GRASP
MEL-
VILLE
STEIN-
FELS



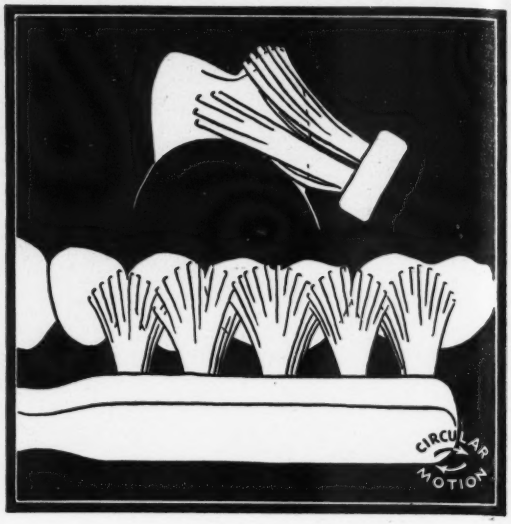


Fig. 1—First position. Lower back teeth. Cheek pulled out and down with back of brush until bristles are free and below gum line. Brush turned so bristles point slightly upward or away from gums. Handle in same plane as gum line. Use palm-and-thumb grip.

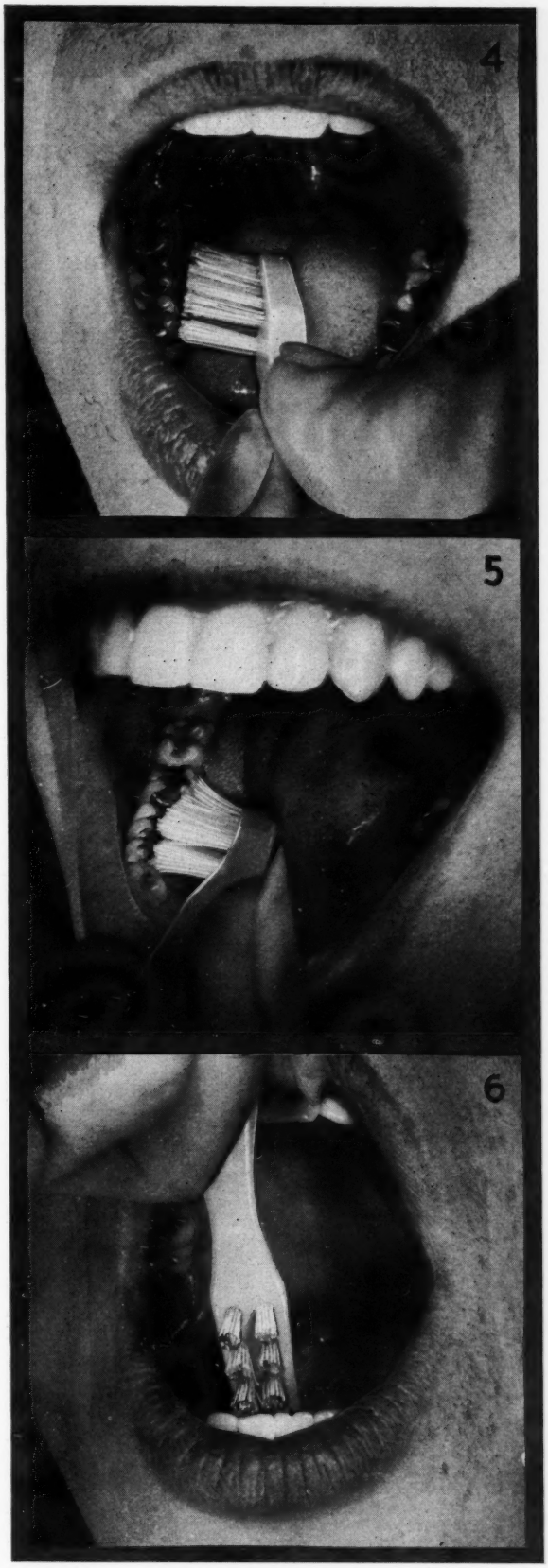
Fig. 2—Brush moved in direct line from first position to teeth. Lower row of tufts or row nearest gums inserted in between teeth. Circular movement for brushing started with slight pressure in direction of bristles. Movement should never disengage bristles. Brush must be lifted away entirely when moved from one group to another.

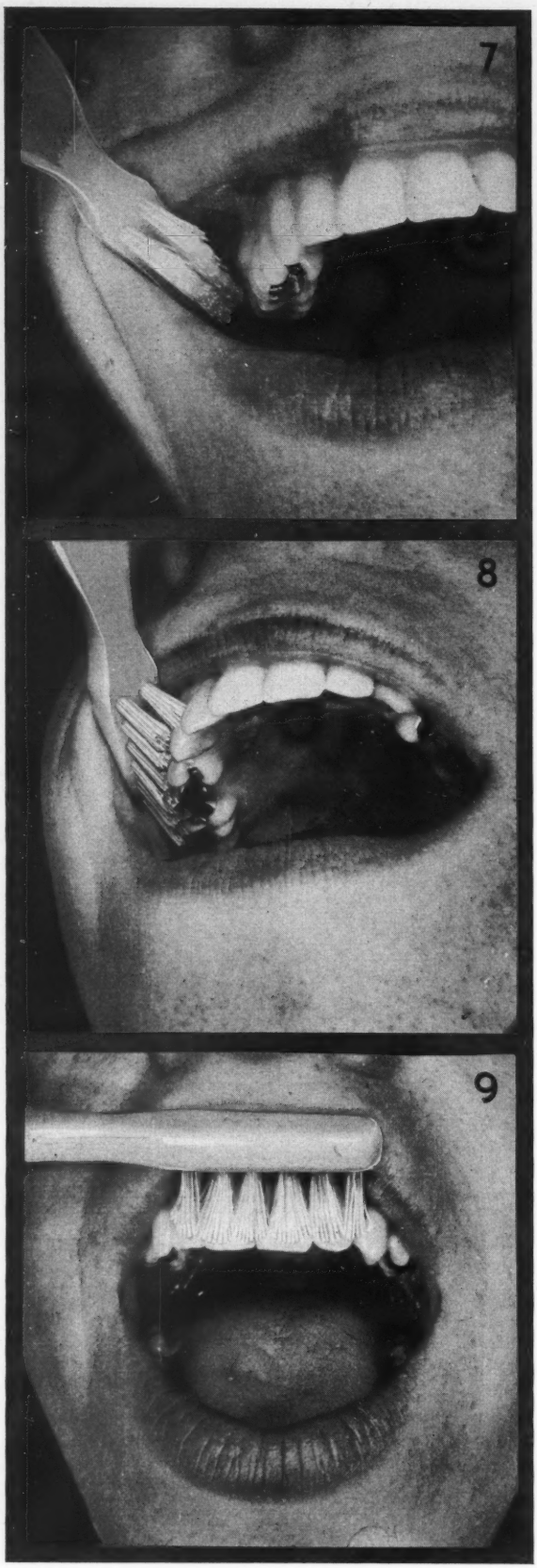
Fig. 3—Position for brushing lower front teeth. Palm-and-thumb grip.

Fig. 4—Position for brushing inner surfaces of lower teeth. Neck stretched and chin pointed out to drop tongue and muscles of the floor of mouth. Brush turned so that bristles point slightly upward. Handle resting on front teeth and tipped so that bristles are below gum line. Pen or pencil grip. Fingers may rest on chin.

Fig. 5—Brush swung from first position to succeeding tooth to be brushed. Lower row of end three tufts is inserted around or between tooth. Handle raised enough to permit movement. Circular motion with slight pressure in direction bristles incline. Inner surfaces of teeth should be brushed one by one.

Fig. 6—Position for brushing inner surfaces of each of six front teeth. Handle held by pen or pencil grip and as nearly vertical as possible. First three rows of tufts are used. Movement is circular with pressure forward. Brush should be lifted away when changing from one tooth to another.





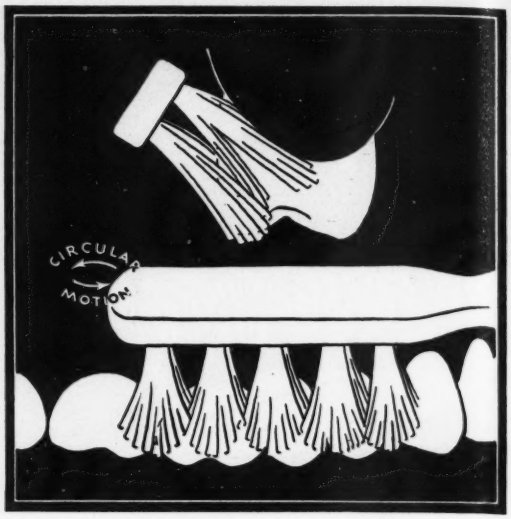


Fig. 7—Upper back teeth. Cheek retracted out and upward with back of brush until bristles are free and higher than the gum line. Brush turned so that bristles point downward or away from the gums. Handle in same plane as gum line (or parallel with gum line). Palm-and-thumb grip.

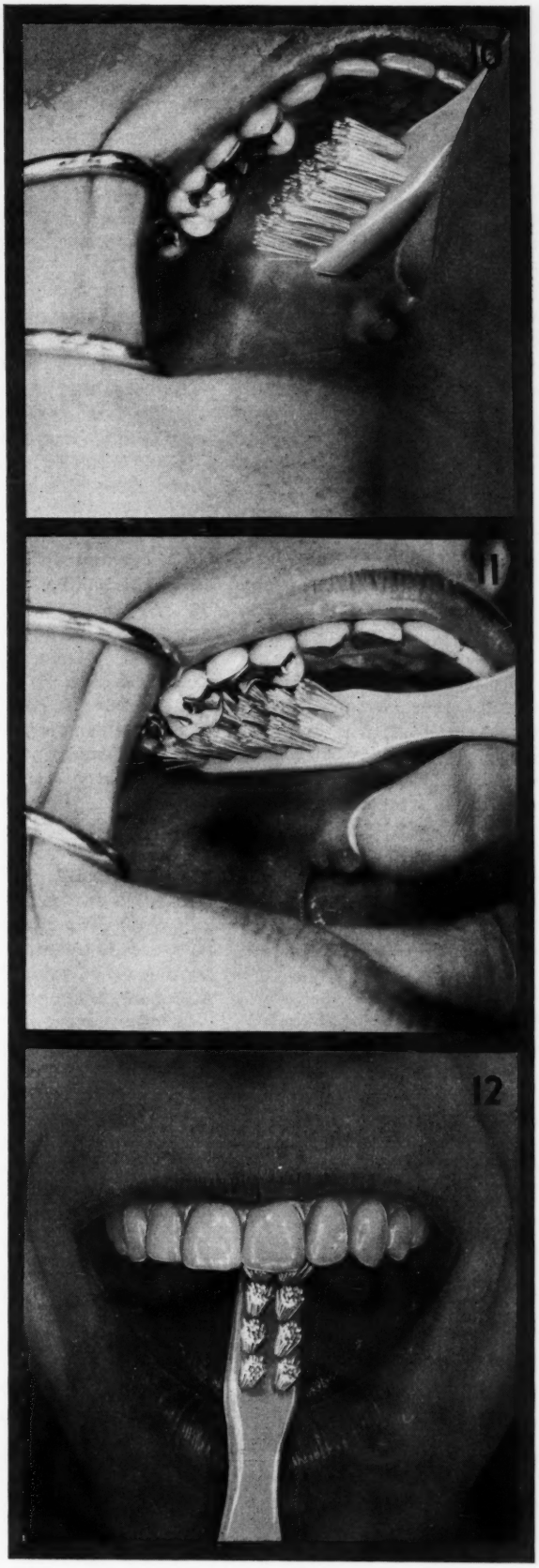
Fig. 8—Brush moved in direct line from first position to teeth. Upper row of tufts, or row nearest to gums, are inserted between teeth. Circular movement started with slight pressure downward in direction bristles are pointed. Movement should never disengage bristles. Brush should be lifted away entirely when changed from one group to another.

Fig. 9—Position for brushing front teeth. Handle held in palm-and-thumb grasp.

Fig. 10—(Cheek purposely retracted to permit photography.) Position for brushing inner surfaces of upper back teeth. Brush turned so that bristles point slightly downward. Handle resting against upper front teeth and tipped so that bristles are above the tooth to be brushed. Pen or pencil grip. Fourth and fifth fingers may rest on the lower teeth.

Fig. 11—Brush has been swung from first position to tooth to be brushed. Teeth brushed one by one beginning at back molar. Top row of end three tufts is inserted around or between teeth. Handle is lowered enough to permit circular movement with slight pressure downward, but in the direction of the inclined bristles.

Fig. 12—Position of brush for brushing back of front teeth. Handle held as nearly vertical as possible in palm with thumb on back. First three rows of tufts are used. Each tooth is centered in between rows, permitting the bristles to pass in between teeth. Circular movement with pressure forward.



Toothbrushing Routine*

FRANK J. HURLSTONE, D.D.S., Chicago

As far back as events have been recorded and in all parts of the world, some method to clean teeth was devised. Whether it was the frayed twigs of the African Negro or the Nipponese, the coarse woolen cloth of England or the grass-chewing of the American Indian, instinctively the human being has felt the need of mouth cleanliness. Early in the eighteenth century the bristle brush made its appearance, and has since supplanted the crude methods of earlier days. Later the dental profession recognized that the proper type of toothbrush was a necessary development; that is, the shape and position of the bristles, the type of handle; the kind of bristles, the process of preparing the bristles —all these factors bore a relationship to the effective use of the toothbrush. Consequently there began a great deal of experimentation in styles of brushes, both by members of the dental profession and by manufacturers. Now there are a bewildering number of brushes on the market, some better than others; many, merely trick gadgets. Certain definite features are accepted by dentists as essential to the proper brush; some variation of these characteristics may be permitted for individual preference.

How to Select a Toothbrush

The selection of the correct toothbrush is the first requirement in hygienic care of the mouth at home. Regular and adequate prophylaxis (cleaning of the teeth) by the dentist must be supplemented by a thorough and efficient routine of toothbrushing at home, and to do this the proper type of brush must be used.

1. A brush of the two-row or narrow three-row type is advised.

2. The tufts should be so placed as to equal the width of the anterior (front) teeth, or half the width of the molars.

3. Six tufts to a row are advised.

4. The length of the bristles should equal the width of the molar teeth, tapered to conical ends of equal length.

5. The bristles should be extra hard in texture, and for this reason an unbleached brush may be preferable because bristles may lose their hardness in the bleaching process.

6. Straight, rigid, and narrow handles are suggested.

7. It is better to buy sealed brushes which have already been sterilized than to attempt sterilization at home. Heat should be avoided as it softens the bristles and distorts the tuft sockets in the handle.

How to Use a Toothbrush

Prevention is the accepted basis of all dental service, and systematized home care is an important adjunct to preventive dentistry.

Toothbrushing is the manipulation of a special device (brush) for the purpose of removing the various accumulations on the teeth and to stimulate the circulation of the gums. Like other similar actions (the golf stroke, bat swing) in which a device is propelled or directed by human power, a systematized procedure or form can be developed and a certain degree of skill acquired.

Let your dentist first show you how to use your toothbrush. Then actually brush your own teeth before a mirror to show your dentist how much you have learned from his demonstration. Practice the routine instructions given here at home for about a week or two before you return to your dentist to have him correct or approve your technique or method of toothbrushing:

1. After placing the brush on the teeth properly, make a small circular movement or motion with slight pressure in the direction of the bristles, nevertheless not big enough to disengage the bristles from the teeth.

2. Permit bristles to work or pass in between the teeth.

3. Increase the speed revolutions (round, circular motion) and retain (grasp) the handle in its original relationship as illustrated.

DO NOT PERMIT THE BRISTLE ENDS TO PERFORATE THE GUMS.

4. Systematize your toothbrushing by dividing the mouth into sections.

5. The position and grip of the brush for each section is explained under the accompanying illustrations. The pen or pencil grip for the inner (lingual) surfaces, with the exception of the upper anteriors (front teeth), enables one to attain greater flexibility. On the other surfaces the palm-and-thumb grip or a slight modification of it is suggested.

6. Brushing should begin on the molars of the selected side and that half of the mouth should be completely brushed before changing to the other half or opposite jaw.

7. When the circular movement of the brush is completed and before the brush is lifted away to the next group of teeth, stroke down over the upper teeth and up over the lower teeth in each section. Never brush cross-wise.

8. The occlusal or biting surfaces of the posteriors (back teeth) may be brushed vigorously after all other movements have been completed.

9. Spend from 8 to 10 minutes brushing the teeth before retiring; other brushing periods may be shorter.

Grow Acquainted With Your Teeth

You live with your teeth all the time. Your dentist sees you only two or three times a year. His efforts during these periods to prevent dental disease will be of less value if you do not give your teeth proper home care. Correct toothbrushing after meals and before going to bed removes the food débris upon which bacteria thrive. Correct brushing furnishes the massage, stimulation, and exercise that the gum tissue needs to maintain a healthful state.

PRACTICE TO IMPROVE YOUR TOOTHBRUSHING ABILITY.

30 *North Michigan Avenue.*

*Reprints of these instructions on toothbrushing routine are available for distribution to patients. Write for price quotations to the publication manager, THE DENTAL DIGEST, 1005 Liberty Avenue, Pittsburgh, Pennsylvania.

A Case of Bite-Raising with All Teeth Present

BERNARD S. CHAIKIN, D.D.S., Boston

THE PROBLEM OF abraded teeth and attrition due to wear is one that presents itself fairly often to the general practitioner. The corrective procedure is extreme but justified by the final results in oral function, pulp preservation, esthetics, and improvement in the patient's mental attitude.

Report of Case

The patient, a white woman, aged 40, had worn down her teeth considerably. At the time treatment was instituted, the occlusal surfaces of the second molars (the third molars were missing) were worn almost to the level of the gum line; the remaining teeth were likewise abraded. Thus the anteriors were short, stubby, and square, with spaces of several millimeters between each tooth. The patient seldom smiled, and then with a noticeably conscious effort at opening her mouth only as much as necessary, and closing it again as quickly as possible. Her mouth in repose showed only a thin, straight lip line, while deep creases had developed on both sides of her mouth and nose, and her chin seemed proportionately too close to her nose.

Correct Opening Established

Photographs, profile and full face, and impressions of the upper and lower jaws are first taken, both for study and future comparison.

Wax bite blocks for varying heights were inserted between the upper and lower posterior teeth to determine how much it would be necessary to raise the bite. It was finally decided that 3.5 mm. in the anterior region would produce a normal curve to the upper lip, a correct facial expression in repose (eliminating unnecessary lines), and would show normal incisal edges of the teeth with the mouth open and the lips relaxed. When the correct opening had been established, the casts were articulated with these bite blocks in position, and wax coverings were fitted over the anterior teeth, and carved to the determined width and length.

Technique

1. Temporary cast crowns were made and adjusted to the desired height, for both upper second molars.

2. Orthodontic separating wire was inserted between the upper first and second molars on both sides, and tightened so that it would create a space large enough to admit a copper tube for an impression, and later, the cast crown. This wire was reinserted at the end of each visit to keep the teeth separated.

3. At the next visit, a copper tube was fitted closely over each upper second molar, and warm compound forced into the tube while it was on the tooth. The impression was taken in this manner so that the compound could be forced up to and not beyond the widest part of the tooth, thus eliminating any drawing of the impression in its removal, inasmuch as the teeth had not been prepared for crowns. This impression reproduced enough of the tooth so that the cast crown made from it would fit by friction and stay for the short time necessary at each visit.

4. The original posterior bite blocks that had been used for measuring were duplicated in the following manner: The original block was inserted in the left side, and the teeth were articulated into new warm wax on the right side until the registration had been made. This procedure was repeated on the other side. Thus there were two bites with which temporary cast crowns were constructed for the designated teeth. When the castings were completed, one crown and the opposite block were inserted in the mouth at the same time, so that the height of the crown and the space between the upper and lower anteriors could be checked; the other crown was fitted in the same way. Then the two crowns were inserted together and checked for accuracy.

5. The first molars and all the bicuspids were prepared for M.O.D. gold onlays. Modeling compound tube impressions of each preparation were taken, from which long-handled amalgam dies were packed, trimmed, and keyed so that they could always be reinserted into the casts in their exact positions.

6. With the crowns in place, a wax bite registration of the entire mouth was made. This was cut down so that only the occlusal and one third of the buccal and lingual surfaces were retained. Hot wax was flowed first into the upper markings, and the bite registered again; then into the lower markings, and the registration again taken. This resulted in a reasonably accurate reproduction of the individual teeth with the bite opened.

7. Each cavity was then filled with hard inlay wax, purposely bulky but with no interproximal undercuts; thus each pattern could be removed independently of its neighboring tooth. A trulastic impression of each jaw was taken with the patterns and crowns in place, both of which were sealed into the impressions after their removal from the mouth. (The purpose of the inlay wax was to insure exact seating of the dies into the impressions in their correct relationships.) The dies were seated and sealed into the patterns, and the casts were run and set up on an anatomic articulator; the previously made wax bite was used as a guide.

8. Wax patterns for the twelve prepared teeth were carved at one time. At this point the wax that had been placed originally over the anterior teeth was referred to in obtaining a new curve of Spee. Then the bite was checked to assure perfect articulation in all positions: protrusive, right, and left lateral. These patterns were invested and cast with a white gold that was hard in order that there would be a minimum amount of wear, thus preventing the anterior jackets from becoming prominent and fracturing. White gold was used because it is less conspicuous in the mouth than yellow gold.

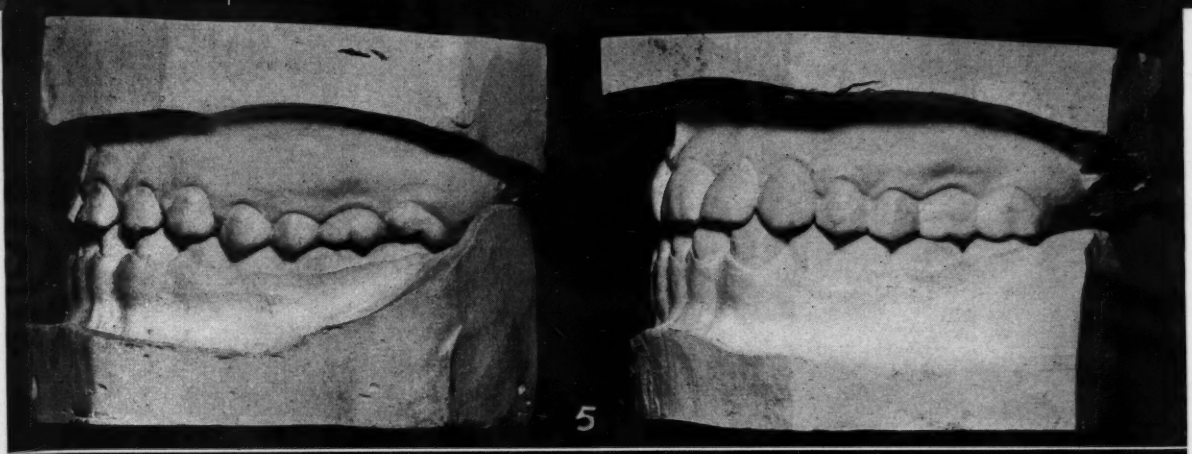
9. At the following visit, the onlays were fitted and checked individually for contact points, and height of

Fig. 1—Front view before treatment.

Fig. 2—Front view after treatment.

Fig. 3—Profile before treatment.

Fig. 4—Profile after treatment.



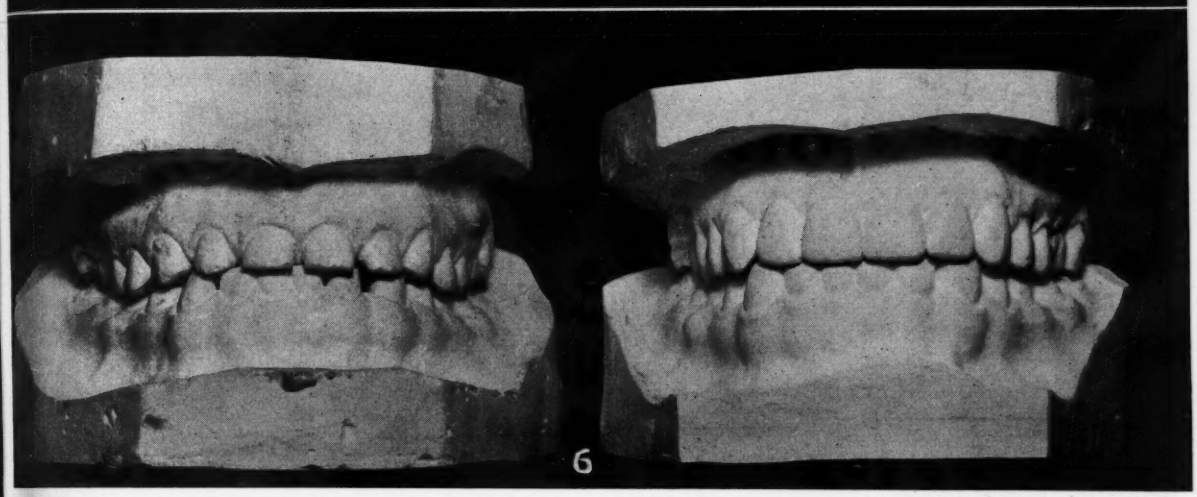
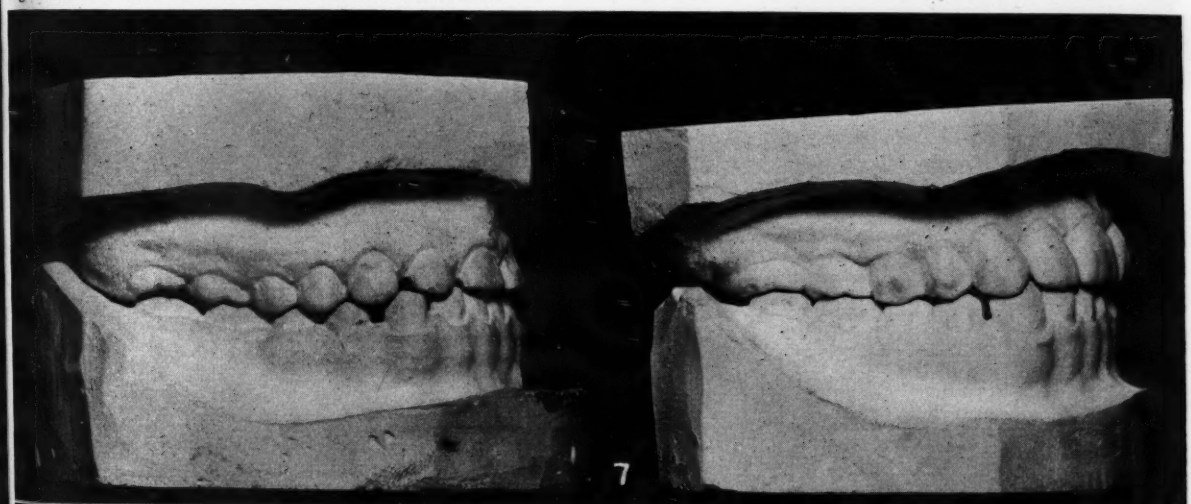


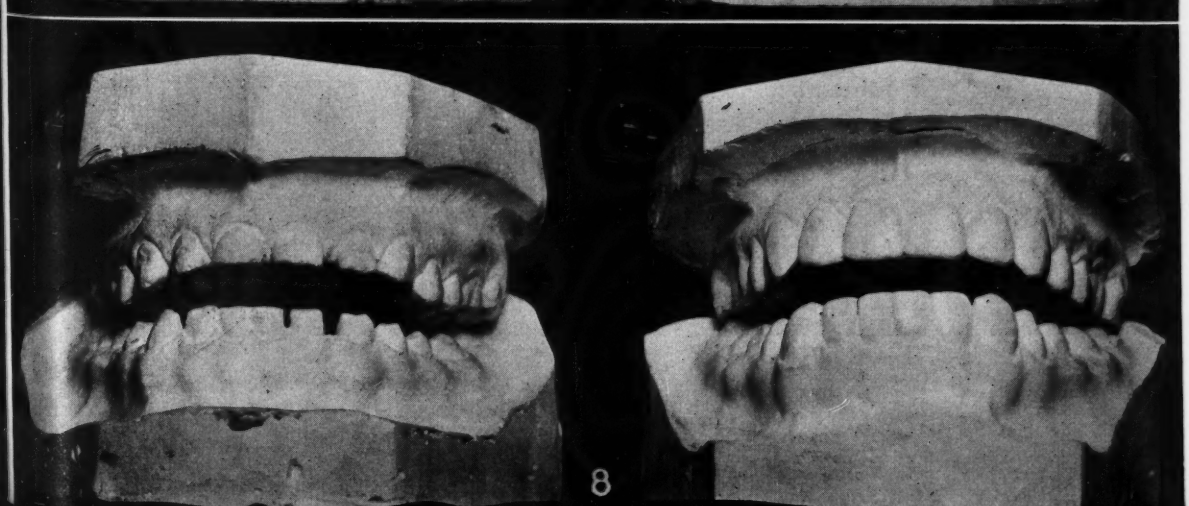
Fig. 5—Left lateral views of models before and after treatment.

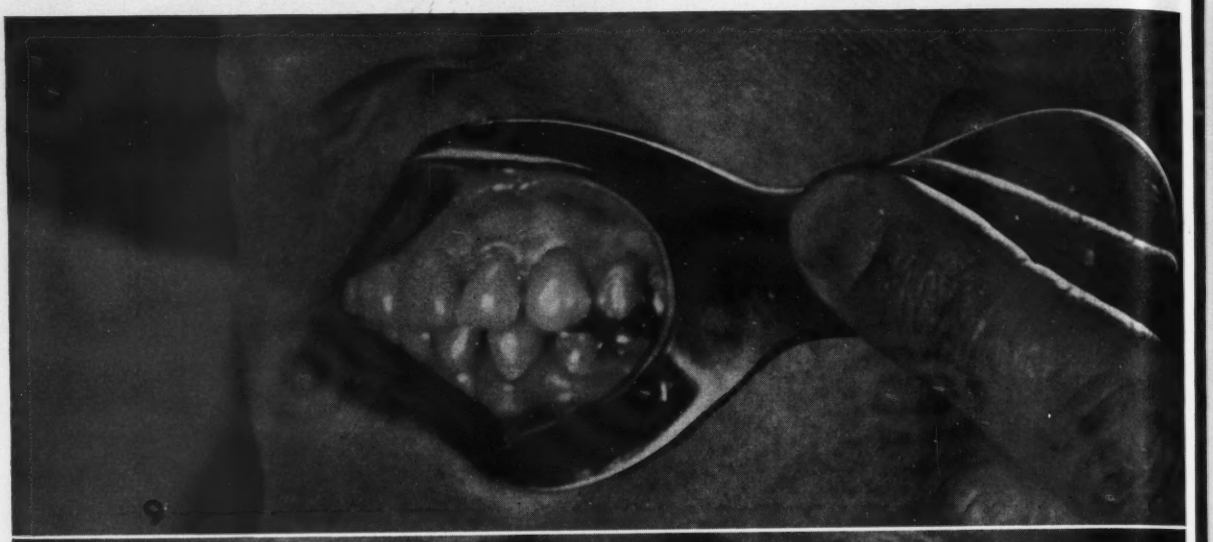
Fig. 6—Front views of models before and after treatment.

Fig. 7—Right lateral views of models before and after treatment.

Fig. 8—Front views of models partly opened before and after treatment.







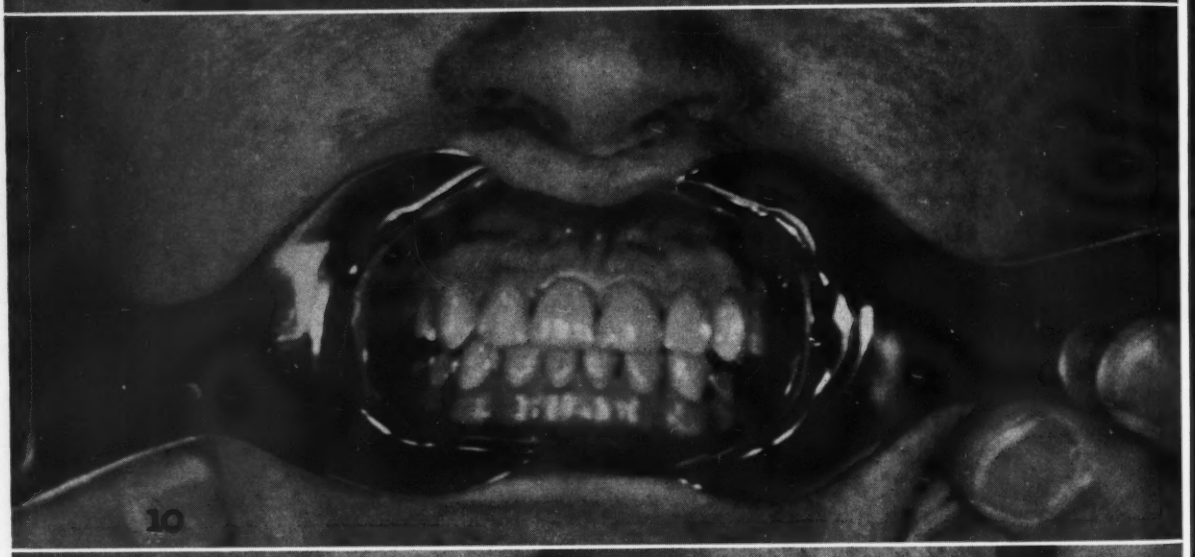


Fig. 9—Left lateral view of finished case.

Fig. 10—Front view of finished case.

Fig. 11—Right lateral view of finished case.

working and rest positions. This was done with and without gold crowns in place as a double check, so that the bite opening remained exactly as had been planned. After all necessary adjustments had been made, the castings were heat-treated to regain their original hardness, and polished. All the castings were cemented to place at one sitting; in this way the bite was kept equalized and any undue strain to the muscles and jaws was avoided.

The patient experienced a slight discomfort for a few days after this operation had been completed; the jaws seemed to be too far apart and were always tired; however, after the muscles had become accustomed to the change, all signs of discomfort disappeared.

10. After this visit the cast crowns, which were of no further value, were discarded.

11. The six upper and six lower anteriors were then prepared for porcelain jacket crowns. The lateral surfaces of the teeth were cut down, and a sharp, distinct shoulder was formed immediately below the free margin of the gums. In this particular case it was advisable to make the preparation as long as possible in order to have sufficient strength and retention for the finished crowns; thus the incisal edges were trimmed only enough to give the preparations their necessary shape, and as much of the length as possible was conserved.

12. Modeling compound tube impressions were taken of each finished preparation, corrected pink wax impressions of each entire jaw made, bites registered, casts poured and articulated, and the twelve jackets were carved and baked at the same time.

13. They were tried in the mouth before the platinum matrixes had been removed, so that necessary corrections could be made.

14. After perfect fit and contour had been ascertained, the jackets were reglazed, the matrixes removed, and the finished crowns cemented to place.

15. The final operation was to prepare the four remaining second molars for M.O.D. onlays, and fit and cement these castings as described.

Comment

It would not have been practical merely to jacket the upper and lower anteriors without raising the bite as described, inasmuch as the result of the constant wearing down of the posteriors would ultimately have caused a severe traumatic occlusion which would have fractured the jackets. It would have been impossible, moreover, to improve the facial appearance to any extent by using only jacket crowns, because the anteriors would still have had to be short, wide, and spaced to conform with the posterior bite.

The results of treatment in this case were extremely gratifying, as shown by the accompanying photographs. The patient's appearance has been greatly improved; the lines and creases in her face are much less noticeable, and the lips have a soft curve, whereas before they seemed tight and drawn. Now that the patient need not be ashamed of her teeth, she smiles and laughs frequently without reserve, and therefore seems a pleasanter person.

483 *Beacon Street.*

INDIVIDUAL METAL TRAYS

(*Continued from page* 524)

the melted metal as previously stated. Remove from the case and trim roughness of periphery (Figs. 13 and 14). Try in the mouth for over-extension, and, if over-extended, trim back until entirely free of any muscle attachment. The baseplate, it should be borne in mind, is still within the metal tray. Muscle-trim and postdam trays with compound. Remove the tin foil; then mix a zinc oxide paste to a creamy consistency; spread over the baseplate, compound, and metal tray where the tin foil was removed (Fig. 15). Place and hold firmly in the mouth for seven minutes. Should there be any difficulty in removing the impression, a few blasts of compressed air blown under the periphery of the impression will loosen it immediately.

3745 *Poplar Street.*

The Editor's Page

FROM TIME to time we have carried material in this magazine intended for the use of the dentist in explaining dental conditions to his patients. We have published this material serially and called it, THE EDUCATION OF THE DENTAL PATIENT. These educational charts have now numbered twenty-five and more than half of these have been reprinted several times in booklet form. More than 20,000 dentists have shown their interest in this project by buying copies of the bound charts. In accordance with this policy of publishing patient education material, which was originated by this magazine, we are presenting in this issue an illustrated article describing the toothbrushing routine. Because we believe that the place to educate the dental patient is in the dental office, this article is directed to the average dental patient; it has been prepared with his needs in mind. We would like to think that dentists will avail themselves of reprints of this feature, TOOTHBRUSHING ROUTINE, to distribute to their patients after chair-side instruction in toothbrushing has been given.

A glaring gap has existed in dental practice between toothbrushing instruction at the chair and the follow-through instruction for care in the home. Too frequently patients have been instructed in toothbrushing technique and then turned loose by the dentist to fumble through as best they can without printed instructions to guide them at home in the procedure. The human mind forgets too easily and remembers too inaccurately. We visualize a new method of instruction, therefore, in which the dentist will give his patients clear-cut definite toothbrushing instructions at the chair, then supply them with printed and illustrated instructions to aid in toothbrushing practice at home.

The toothbrush is one of the most common toilet instruments and one most often used improperly. The toothbrush can actually cause injury if used incorrectly. The destruction of the enamel may result and destruction of the soft tissue may occur. All one has to do to verify the impression that the American public uses toothbrushes vigorously but not too well is to watch the grimaces in the washroom of a Pullman. There one sees every kind of brush and every type of dentifrice, but seldom does one observe, even on trains going to dental conventions, a toothbrush used properly. That brings up the question, "What is a toothbrush supposed to do?" As Doctor Hurlstone points out in his excellent article on page 530, a toothbrush has a twofold purpose: cleaning and stimulation. The toothbrush is a combined broom and exercise instrument. It is intended to sweep the mouth clean of food residue and bacteria, and, in functioning as a stimulating instrument, brings fresh aerated blood to the soft tissues and aids in the disposition of static blood from the soft tissue. The function of exercise is to aerate tissue and dispose of waste products. In the end-circulation in the soft tissues this is as necessary as in any other part.

Another adjunct in the home care of the teeth which should be mentioned is dental floss. This agency is used strictly for cleaning purposes because it is too thin for gingival massage. As Hirschfeld[1] warns, dental floss when handled improperly may injure the septal gingiva, and, therefore, instruction is required for its use so as to avoid a sudden release against tissue after the dental floss passes the contact points. Hirschfeld recommends: "a) the use of a minimum span of floss; b) a firm grasp so that it can be held taut in a *straight* (not sagging) line." c)" . . . keeping the taut floss at an *oblique* angle."

Pioneer man did not use a toothbrush extensively. Nor did he need a vicarious exercise for his body muscles. He followed a plow through the dark furrows; he lustily swung an axe. Pioneer man chewed coarse breads and fibrous foods, and thus protected his dental tissues. Modern, sedentary man follows, not the plow through the dark furrows, but a white ball over green pastures; he swings a tennis racket in place of the axe of his forebears. Modern man lazily gulps ice cream and white bread and jams and hamburgers. Thus he must stimulate and exercise his dental tissues artificially, by means of the toothbrush. But modern man must employ the toothbrush intelligently, correctly, systematically if he is to derive all good and no harm from its use. To that end, TOOTHBRUSHING ROUTINE is presented on pages 525-530 of this issue.

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[1] Hirschfeld, Isador: The Toothbrush—Its Use and Abuse, D. Items Int. 59-29 (January) 1937.

Dental Electroforming

IRWIN ROBERT LEVY, D.D.S., New York

AT PRESENT DENTAL electroforming is mainly used in making dies for indirect inlays and porcelain jacket crowns, as well as for prosthodontic and orthodontic models. Those interested in dental electroforming visualize its potential value in many additional laboratory operations.

In making dies for inlays and porcelain jacket crowns absolute accuracy is necessary, and electroforming is, therefore, the method of choice inasmuch as in its use there is no volumetric change, no modification of temperature to produce a variable, and no pressure which might cause distortion. Amalgam, plaster and cements, which have been used for making dies, are plastic and each has a decided setting contraction. There is no expansion or contraction possible in electroforming. As compared with amalgam, the most widely used die material, the time element is favorable. It takes six or eight hours for the amalgam in the die to set, and a die can be electroformed completely in less than two and a half hours. Furthermore, the production of a good amalgam die is a complex operation, depending largely on the skill and conscientiousness of the operator. Electroforming completely eliminates the personal element. The machine does all the work.

Electroplating has been used commercially since about 1800. From this process which is the electrolytic deposition of a metallic surface, electroforming was evolved. Electroforming, the principle use of which is electrotyping, may be defined as the building up of a metal, deposited by passing an electric current through an electrolyte.

A low voltage current passed through an electrolyte causes the electrolyte to be ionized. The positively charged ion is attracted to the negative pole or cathode, and the negative ion gravitates to the positive electrode or anode. Thus, a coating or "plate" of the metallic positive ion adheres to the cathode. Although most metals can be deposited electrolytically, copper is best adapted to this purpose. It is for this reason that copper is used in electroforming and as a base for other metals in electroplating. It is simple of operation, rapid, inexpensive, and produces a strong accurate deposit. Copper may be deposited through either an alkaline or an acid medium. The acid or copper sulphate bath has been chosen as more generally suited for dental operations because of its simplicity, speed, and safety.

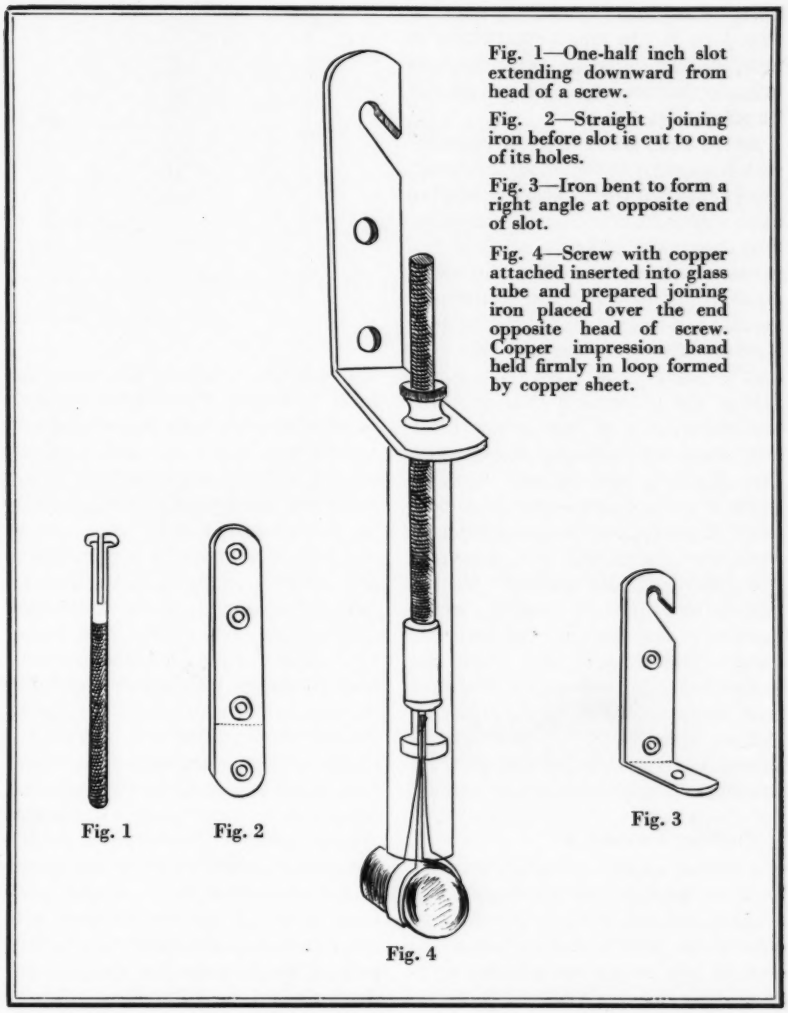

Fig. 1—One-half inch slot extending downward from head of a screw.

Fig. 2—Straight joining iron before slot is cut to one of its holes.

Fig. 3—Iron bent to form a right angle at opposite end of slot.

Fig. 4—Screw with copper attached inserted into glass tube and prepared joining iron placed over the end opposite head of screw. Copper impression band held firmly in loop formed by copper sheet.

Fig. 1 Fig. 2 Fig. 3

Fig. 4

Preparation for Plating Bath

To prepare the bath, commercial copper sulphate, a crystalline salt commonly known as blue vitriol ($CUS0_4$-$5H_20$) is dissolved in distilled water and acidified by the addition of sulphuric acid. The copper salt is first dissolved in the proper amount of water and the acid then added. Since the presence of the acid decidedly decreases the solubility of the copper sulphate, the solution of the salt should always be made before intro-

ducing the acid. The formula that produces the best results is herewith given:

$CuSO_4$-$5H_2O$	28 ounces
H_2SO_4	8 ounces
Aq. Dest. Q.S.	1 gallon

Commercial sulphuric acid is sufficiently pure for use in the plating bath. The impurities that may be found in it are small quantities of arsenic, iron, nitrates, chlorides, and organic matter, which do not impair its efficiency.

As the bath grows older, it is necessary frequently to replenish the weakened acidity of the solution by adding more sulphuric acid. In order to maintain the proper solution, it is also imperative to keep the quantity of water constant, since there is a continuous decrease in the volume of the bath as a result of evaporation. It is my custom to make a file mark on the outside of the glass tank that contains the electrolyte, at the proper level, and when the solution drops below this mark, to add enough water to bring it again to its original proportions. If the content is not sufficiently high, the deposit will be spongy and the anode become covered with a muddy coating or sludge, which markedly decreases the anodal efficiency. Therefore, if the anode becomes coated in this way and the solution sluggish (that is, not plating quickly and evenly), it is necessary to add a little sulphuric acid to bring the solution back to its proper vitality.

Plating Procedure

A bar of copper is suspended in a tank containing the electrolyte described and attached to the positive cord of the plating machine, thus becoming the anode or positive electrode. The object which is to be plated is attached to the negative cord of the machine and suspended in the solution. It thus becomes the cathode or negative electrode. A low voltage current passed through the bath breaks the copper sulphate into positive copper ions and negative sulphate ions. The positive ions, attracted to the negative electrode, deposit pure metallic copper, whereas the negative ions attracted to the anode decompose the copper bar and form copper sulphate, which, in turn, replenishes the solution.

Fundamentally, the electrochemical reaction resulting in copper deposit is simple. The copper sulphate in solution is entirely dissociated into cupric ions ($Cu++$) and sulphate ions (SO_4). The sulphate ions do not enter into the reaction at all and may be disregarded. Copper ions may be considered as metallic copper which has lost two electrons. At the cathode (the negative end) there is a surfeit of electrons. The cupric ions, therefore, tend to take on these electrons and revert to metallic copper, thus plating out of solution at this point. At the anode, there is a shortage of electrons. The metallic copper, therefore, tends to give up its electrons and form cupric ions. These cupric ions travel through the solution to the cathode, where they plate out by the process described. At the anode, however, some of the copper goes into solution as cuprous ions ($Cu+$). This process yields only one electron per copper atom, and therefore twice as much copper goes into solution per ampere of current used. At the cathode, cupric copper is being plated out, so that more copper ions are entering the solution than leaving it. Since cuprous copper is slowly oxidized in air to cupric copper, eventually there results an increase in cupric ions, which increases the alkalinity of the solution. It is therefore necessary to add sulphuric acid correspondingly to increase the number of sulphate ions and maintain the proper hydrogen ion concentration (PH).

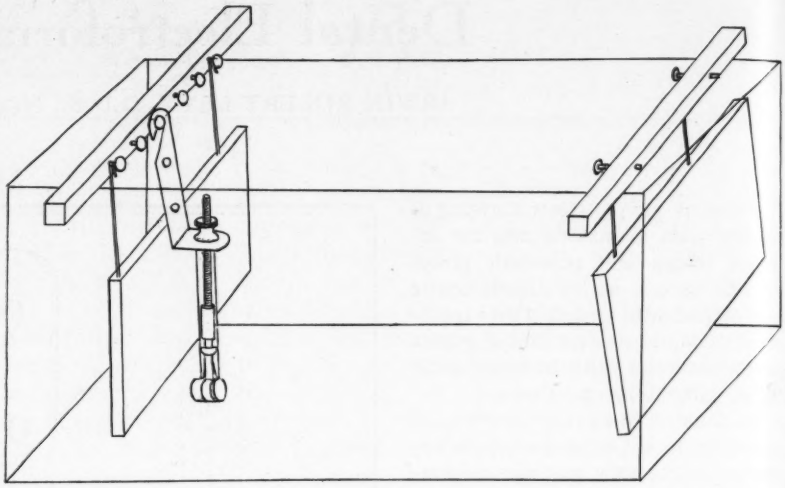

Fig. 5—Racking the case for plating.

Excessive current density causes "treeing" which is the building up of a group of metallic globules on a peduncle, forming a cluster somewhat suggestive of a tree. If the current is still further increased a brown powdery deposit will result. This, because of its scorched appearance, is known as "burning." Agitation of the solution is used by some to improve the quality of the deposit. This action of the bath may be brought about by aerating the solution or by the use of a mechanical mixer. Electrotypers bubble air through the bath, midway between the two electrodes, but this method is not completely satisfactory in dentistry. Our problem is to throw the deposit into deep recesses and the air interferes with the throwing power; the air combines with the copper to form copper oxide, and destroys the integrity of the solution.

For dental purposes, stirring is preferable. The agitation must be slow, because a whipping motion will interfere with the deposition. Stirring at the rate of about sixty revolutions per minute seems to be satisfactory, causing gentle motion of the solution.

Choice of Impression Material

One of the most important of all the advantages of electroforming is the wide choice of impression material. Most dentists with whom I have discussed the matter agree with me that modeling compound is inaccurate and not dependable, particularly for impressions of cavity preparations.

Waxes, such as inlay impression wax and so-called carding wax (ozokerite) take a more accurate impression than modeling compound. I have used them with some success and still find occasional need for them, but I have found that the most satisfactory impressions can be obtained by the use of trulastic. This material reproduces the finest detail and is simply and quickly handled.

Technique

1. A copper band is selected, preferably a trifle larger than the tooth, so that there may be plenty of excess around the margins.

2. After it is fitted, the end of the band is covered with modeling compound and chilled. This compound acts as a retainer to prevent overflow of the impression material.

3. The band is then filled with softened trulastic and the impression is taken.

4. It is not necessary, in fact, not advisable, to chill the impression. Simply press it firmly into place, remove it almost immediately, and a remarkably good impression results.

5. In order to copper-plate this impression and form a copper shell which when backed with low-fusing metal or artificial stone will become a die, it is necessary to make the surface of the impression a conductor of electricity. The technique used is that of coating the surface with bronze powder or graphite.

6. The impression is lightly covered with oil (ordinary machine oil will do), and the excess oil blown off. With a stiff brush, the copper powder is now vigorously burnished until it adheres tightly to the surface of the impression. By holding it under running tap water excess powder is then washed off.

7. The band containing the metallized impression is fastened to an electrode, which is then affixed to the bus bar of the plating machine. Various contrivances have been used for this purpose. Dissatisfied with them, I designed an electrode which can be easily and inexpensively made by anyone.

Construction of Electrode

1. With a hack saw, the slot in the head of a 2½ inch machine screw is continued for about one-half inch (Fig. 1).

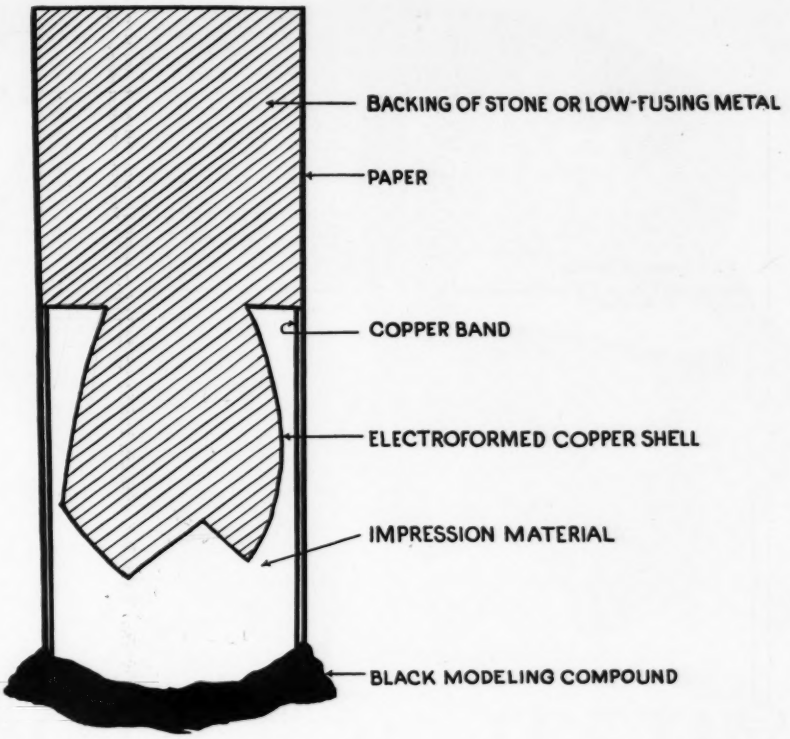

Fig. 6—Cross-section of a die, electroformed, backed, but not separated. A, Backing of stone or low-fusing metal; B, paper; C, copper band; D, electroformed copper shell; E, impression material; F, black modeling compound.

2. A straight joining iron (Fig. 2) is then altered as may be observed in the diagram, by cutting a slot to one of its holes with the hack saw. The iron is placed in a vise and bent to form a right angle at the other end (Fig. 3).

3. A small piece of copper or brass tubing, just large enough to fit loosely over the screw and cut into pieces about three fourths of an inch long; a battery terminal nut, and a piece of glass tubing complete the equipment.

4. A strip of copper sheeting (32 gauge) is cut into strips about one-fourth inch wide and 3 inches long. The two ends are inserted into the groove of the screw and lapped over on its shank. The copper or brass tube is then slipped over to act as a sleeve and hold the sheet copper in position.

5. The screw with the copper attached is then inserted into the glass tube (empty carpule tubes serve this purpose well), and the prepared joining iron is placed over the end opposite the head. This is then secured by screwing the nut into place, so that the copper impression band is held in the loop formed by the copper sheet. As the nut is screwed tighter, it takes up the slack of the copper sheet and the band is held firmly in place (Fig. 4).

6. The iron is then slipped over a terminal of the bus bar, forming a simple, efficient electrode.

By this method the impression band is held firmly in place without waxing it on and a broad contacting surface is obtained, an obvious advantage in transmitting current. Furthermore, the use of the electrode obviates the necessity of covering the band with a protective coating of wax to prevent the plate from attacking parts that are not to be plated. The copper strip is placed at the edge of the impression band, so that when the case has been plated and removed from the bath, the copper strip can be peeled off along with whatever plate it has accumulated, and a clean bright surface of copper band results.

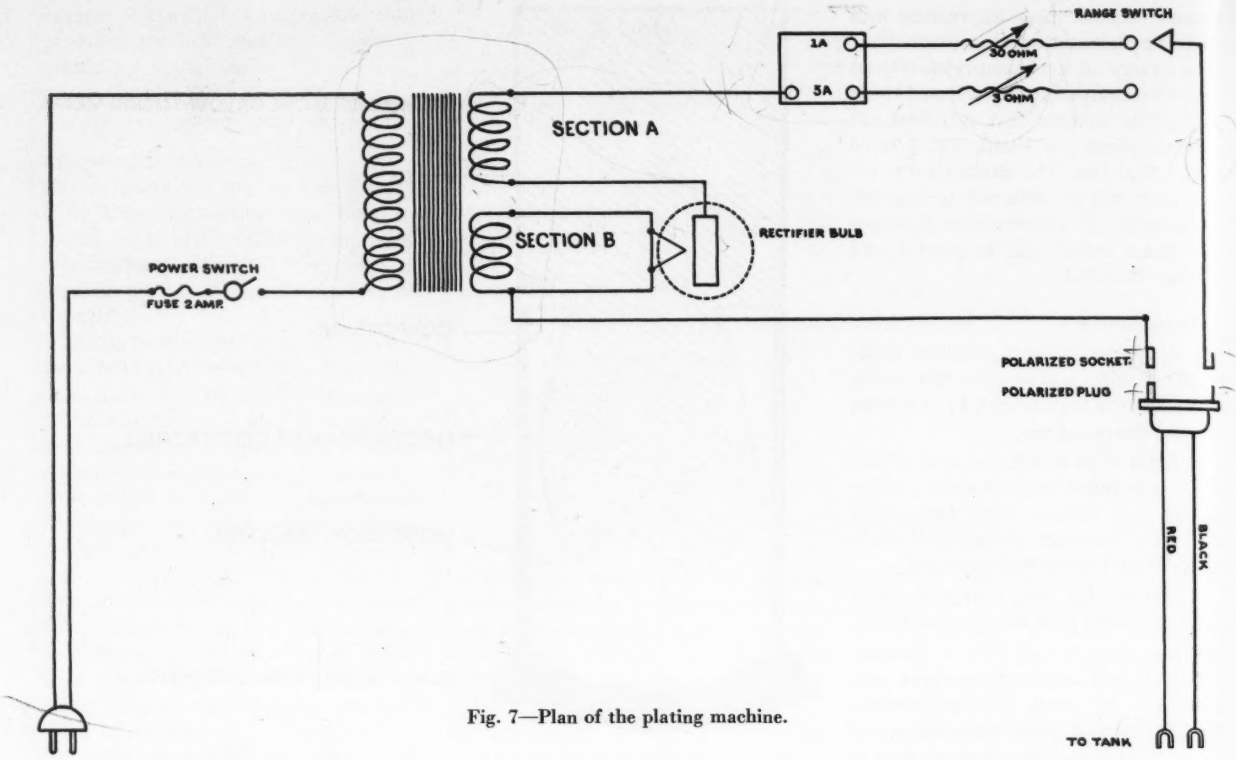

Fig. 7—Plan of the plating machine.

Standardized Size of Cathode

In racking the case for plating, a slight but important change in technique is recommended (Fig. 5). It has hitherto been believed necessary to use a low current density for dental electroforming, because the band and its contained impression are so small in comparison to the anode that a high current density burns them. This necessitated a lengthy exposure to the current. In order to shorten the plating time as well as to improve the quality of the deposit, I have standardized the size of the cathode, making it approximately the same size as the anode. When a large anode and a small cathode are used, the strength of the current is focused and burning results. If, however, an auxiliary cathode is used as shown in the accompanying diagram (Fig. 5), the current is diffused and the advantages of a much higher current density may be utilized.

With this in mind, I use as an auxiliary cathode, a copper bar equal in size to the anode, and hang the object to be plated directly in front of this auxiliary cathode. Because of this, a current density of from 3 to 4 amperes can be used, thus completing a copper shell die in from two to two and a half hours if desired (Fig. 6).

High Amperage Machine

To produce this high amperage I had a machine constructed capable of producing 5 or 6 amperes and yet readily controllable up to that point. This unit uses a mercury vapor rectifier bulb in half wave connections. A transformer provides a cathode voltage of 11 volts, unloaded. The characteristics of this transformer are such that the voltage of Section B is 2 volts when no current is being supplied, but when the output current reaches a value of 5 amperes the voltage of Section B is 1.6 volts. This is necessary in order to obtain maximum efficiency and life of the rectifier bulb.

A dual range ammeter provides accurate monitoring of the output current. A range switch selects the control as well as the corresponding ammeter scale. The 5 ampere control is a 3 ohm rheostat, the 1 ampere a 30 ohm rheostat. Both are capable of carrying higher currents than required, as a rheostat operating at capacity is apt to overheat when enclosed in a cabinet. Capacity ratings are based on their use in 1 foot of free space, which seldom happens in practice. A polarized socket is used to facilitate connection to the tank and assure correct polarity. Two 12 gauge flexible wires, one black, the other red, are attached to the polarized plug, providing tank connections (Fig. 7).

Summary of Advantages in Electroforming

The outstanding advantages of electroforming in density are (1) the accuracy of the dies obtained by this method; (2) the time saved; (3) the simplicity, and (4) low cost of the system.

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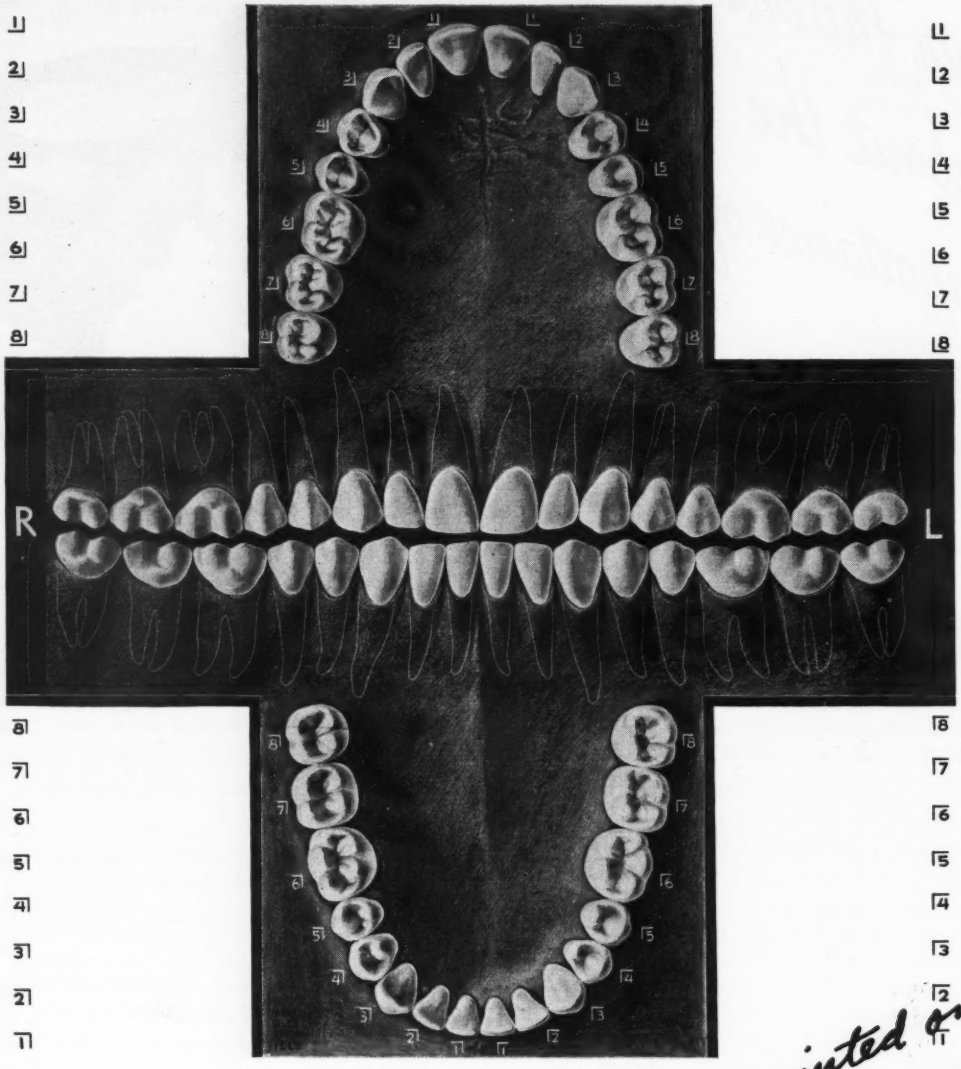

CLINICAL NOTES

Specimen of chart which is printed on white, durable paper of the right texture for crayons or colored pencils

Suggestions for the use of

The Ryan Examination and Treatment Record

1. The Ryan Examination and Treatment Record may be had in pads of fifty charts each. These pads fit conveniently in a standard 9½ by 11½ inch loose-leaf notebook which may be purchased at a five-and-ten cent or variety store.

2. Alphabetical dividers may be made by using a ten cent package of plain white paper of the same size as the charts with holes punched at the same distances, and a fifteen cent box of alphabetical index tabs. The holes are reinforced.

3. It is a good plan to keep a blank sheet of paper between the charts to prevent possible smearing of crayon or pencil markings; but this is not essential.

4. A fresh pad of charts may be kept ready for use in back of the notebook of active records.

5. The various types of restorations and their location in a particular mouth are shown with the use of polychrome pencils—gray, for amalgam; deep yellow, for gold. White pencil does not show up very well; consequently, porcelain may be indicated with soft lead pencil outlines or cross-hatching.

6. Spaces provided beside the quadrants with numbers corresponding to the teeth permit special notations concerning each tooth. As treatment progresses the blue markings indicating needed dentistry are erased, and the nature, location, and date of placement of each new restoration are recorded. Additional clinical notations are made if necessary in the space provided for that purpose below the chart itself.

7. It is essential to be consistent in any system of symbols or markings developed. To insure consistency, it is well to have a key page in the front of the notebook.

8. The exact record of conditions found in the average patient's mouth at the original examination can be completed in fifteen or twenty minutes, and the time it takes to keep a chart up to date is negligible.

9. When a chart is completed the necessary data (name, address, telephone, reference, estimate, and terms) are typewritten in the spaces provided at the top of the record. The date of the original examination is also recorded in order that the treatment dates (as shown in the quadrants at the sides of the chart) will be recognized as subsequent to the date of the original examination.

10. Provision is made on the back of the chart for bookkeeping records. This is merely for the convenience of dentists who wish to keep all records together, but may be ignored by dentists who have a satisfactory bookkeeping system which they need not and do not wish to discard. The Ryan Examination and Treatment Record may be employed as an additional or supplementary record to any established method of record-keeping dentists may have.

11. Although the Ryan Examination and Treatment Record was designed for the dentist's own convenience in his practice, the charts have been found to have a definite informative value in explaining conditions to patients. The charts are also particularly helpful in reporting dental conditions of patients to cooperating physicians.

TYPES OF PENCILS

Yellow	Mongol No. 867
Gray	Mongol No. 819
Red	Mongol No. 866
Blue	Mongol No. 865
Yellow	Castell No. 40
Gray	Castell No. 57

Mongol pencils are made by Eberhard Faber; Castell by A. W. Faber.

SUGGESTED SYMBOLS

Each dentist may develop his own system of symbols but the following specific markings have been found simple and adequate:

Soft Lead Pencil—(a) Porcelain fillings are indicated by a pencil outline.

(b) Porcelain jacket crowns and bridges are shown by cross-hatching with lead pencil across the corresponding tooth or teeth on the chart.

(c) Missing teeth are blocked out with a soft lead pencil.

(d) Abrasions are represented with soft lead pencil.

Blue Pencil—(a) Cavities are indicated with blue pencil.

(b) Advisable restorations are demonstrated with blue pencil.

Red Pencil—(a) A red line is used to indicate the presence of a root canal filling.

(b) A red outline shows the presence and position of an impacted tooth.

(c) Red pencil is used to represent pulp involvement.

(d) A red "X" is made across a tooth to indicate that its extraction has been advised.

(e) Pyorrhea pockets are represented in red along the crest of the alveolar ridge (and a notation is made at the bottom of the chart if extensive gingivitis is present).

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If you have not ordered your charts, clip the coupon, and mail with a dollar bill.

Clinical Notes

Anomaly

A woman, aged 40, presented herself at my office to have her remaining upper teeth extracted. I extracted the six anteriors and one upper left posterior tooth, leaving the three

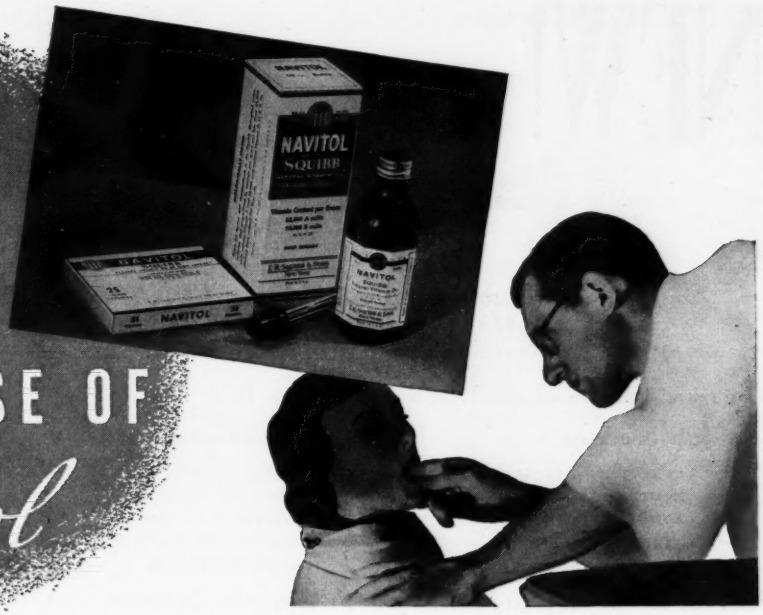
upper right posterior molars to be extracted at the patient's last visit. On grasping the first molar, all three molars came out with their roots fused together as shown in the accompanying photograph. — ARTHUR A. SCHWEITZER, D.D.S., 252 *West Seventy-Ninth Street, New York, N. Y.*

Severe Referred Pain: Report of Case

The patient, a woman, aged 28, presented for treatment with the following symptoms: For the last year she had suffered with severe neuralgic pains in the left side of her head, and radiating pains down her left arm. She also had frequent earaches, and at the time she presented for treatment her eyes were semifixed; she could not move them upward.

History—A year prior to my examination of the patient, she was married, and about a month later began to develop pains above her left eye and around her left ear. The pains gradually became worse, so she told her husband about the condition. He referred her to his physician who gave her a complete examination and stated that she was physically in excellent health. He told her that the symptoms were due to nervousness and prescribed a sedative. Gradually the effect of the sedatives wore off and the pain grew more severe. By this time, as a result of loss of sleep and continued pain, the patient's physical state was poor. She lost weight and was extremely nervous.

A LOGICAL REASON FOR THE USE OF *Navitol*



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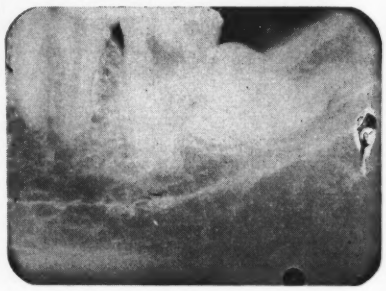
The attending physician at this time evidently thought there was some glandular disturbance, or symptoms of beginning menopause, and treated her with hypodermic injections of ovarian extract, but this treatment brought no improvement. A psychiatrist was then consulted, and he decided that a love affair prior to her marriage had caused this nervous tension as the patient had seen the man about the time her illness began. His treatment proved fruitless, and a rest away from family and friends was advised. While she was



away on this vacation, the patient had a slight toothache, and it occurred to her that perhaps a tooth had something to do with her condition. It was then that she came to my office for a dental examination.

Clinical and Roentgenographic Examination—Clinical examination revealed no teeth that might have a bearing on the case, but full mouth roentgenograms showed a lower left third molar impacted horizontally with the roots pressing into and constricting the mandibular canal.

Treatment—Conduction anesthesia was given on the left side, and the pain ceased almost immediately. The patient's sudden relief was such a shock that she became hysterical in the chair. A sedative was given, and the offending tooth extracted.

Postoperative Result—The pain she had been having stopped when the healing process was completed, and has not recurred. The patient reported that the day the tooth was removed, she had had her first sound sleep in a year. One week after removal of the tooth the patient's eyes were almost normal and she was able to roll them upward. The pains in her left arm have not recurred.—STERLING T. BOWEN, D.D.S., 5514 *Wilshire Boulevard, Los Angeles.*

Dental Digests

Subclinical Disorders

[The Oral Tissues in Diagnosis of Sub-Clinical Disorders, By Harold J. Noyes, Chicago. The Alumni Bulletin, University of Illinois College of Dentistry, 24:4 (September) 1937.]

"Subclinical disorders are departures from that optimum state of health which is potentially available to the individual." In order to diagnose these disorders, three sources of data are suggested: (1) calcification of the oral hard tissues (which are revealed in the gross and microscopic observations of the teeth and jaws); (2) decalcification of the same structures (observed in dental caries, osteoporosis, and inflammatory absorption of bone); and (3) lesions of the soft tissues of the mouth (seen in aphthous stomatitis and other acute and chronic gingival infections).

Calcification of Oral Hard Tissue

Hypoplasia — Calcification occurs with sufficient regularity in the deciduous teeth from the fifth month before birth to the third postnatal year to give us a record for interpretation, and the manner in which the deciduous teeth are shed makes this record available. The formation of the dental units themselves is an excellent guide to the mineral metabolism of the person. Hypoplasias have been for years associated with rachitis, acute fevers when nutrition must be effected, and mineral unbalance, such as spasmophilia. However there is nothing specific between hypoplasia and the particular cause.

Bone — Roentgenograms of the maxilla and mandible often reveal evidences in growth and developmental deficiencies, many of which are due to subclinical disorders. These will often give the clue to further investigation. Notable in this respect is the lack of maxillary development and perhaps most marked in the premaxillary area which is frequently seen in allergic children and in chronic sinusitis.

Decalcification of Oral Tissues

Dental Caries—Abnormal decalcification if long sustained will provoke pathologic disorders outstanding among which is dental caries. The conditions which favor caries are intimately related to the metabolism of

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the person. The literature on the subject is voluminous and controversial, but certain pragmatic facts are known:

1. We know that children on well balanced diets develop less caries than children on poor diets.

2. We know that children consistently above average for height and weight have fewer cavities than those who are below these averages.

3. We know that we can often initiate a carious attack by feeding a diet rich in sugars and can frequently curtail the disease by placing the subject on a diabetic menu.

4. We know that the inclusion of the vitamin supplements, food catalysts, if supplied when they are deficient, appear to have a favorable effect.

5. The patient with acute dental caries susceptibility is not a well person, and this is true without reference to the existence of absence of the gross observations of the common signs and symptoms of disease. This condition is an evidence of subclinical disturbance.

Periodontitis—Periodontitis is another demineralizing disease. Broderick believes that caries represents a catabolic state whereas periodontitis represents an anabolic state. At any rate, again, a subclinical disorder is present. Like caries the cause appears to be nonspecific.

Root Resorption—In decalcification or absorption of the roots of teeth a systemic disorder is likewise indicated. The orthodontist has been blamed for this condition in many cases, but it should be remembered that orthodontics and the taking of full mouth roentgenograms developed simultaneously; moreover, full mouth roentgenograms are taken more frequently of children undergoing orthodontic care. It is probably true that given a child with the systemic constitution favoring this absorption, the application of force may intensify the tendency. The movement of teeth in conformity with their physiologic growth and developmental pattern is far less likely to cause disaster than at variance to it.

Lesions of the Soft Tissues

Aphthous Stomatitis—The small ulcer or canker sore has long been considered by nurses and mothers as an indication of moderate lowered resistance. The diet and hygienic regi-

(*Continued on page* 550)

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(Continued from page 548)

men of the patient often justify investigation in cases of this nature.

Vincent's Infection—Although local therapeutic measures will usually clear up a case of Vincent's infection, a lasting cure will not be attained without attention to the systemic factors unless the basic causes were merely transitory. Vincent's infection is often a complication in cases of blood dyscrasias, such as agranulocytosis and leukemia of which it is often an early sign. Consideration when it is present should be given to these more serious possible underlying disturbances.

Gingival Hyperemia and Congestion—Puffiness, cyanosis and hyperemia of the gingiva are often early warnings of systemic disturbance such as lack of sugar tolerance and vitamin C deficiency.

Mottled Enamel

[Removing Stains from Mottled Enamel, By J. Wilson Ames, D.D.S., Smithfield, Virginia, J. A. D. A. & D. Cos. 24:1674 (October) 1937.]

Definition

Mottled enamel is a developmental defect of teeth resulting from drinking water and perhaps eating foods containing excessive quantities of fluorine during the period of tooth calcification.

Manifestations

The affected teeth are usually glazed on the surface. They may be paper-white and void of translucency, or have this paper-white as a background, with areas of yellow or brown in any shade, and even black. These areas are irregular in outline and varied in shape. The most characteristic areas are bands extending across the axial surfaces from the mesial to the distal aspects. These bands may be zigzag streaks. Sometimes the labial surfaces are pitted. If the mottling is serious the enamel may become chalky and flaky and lose its normal glaze and luster.

Specific Incidence

In a survey which W. C. Ames and J. Wilson Ames conducted, 50 per cent of the pupils in Smithfield High School, Smithfield, Virginia, were found to have mottled enamel.

Formula Used in Pragmatic Treatment

By mixing five parts of 100 per cent hydrogen dioxide and one part of ether, an effective formula was obtained.

Technique

1. A rubber-dam is adjusted, isolating the teeth to be treated. Gauze exodontia sponges should be packed all around the dam for safety, because the solution is injurious to soft tissues.

2. The use of rubber gloves is also advised as well as a shield of mica for the patient's eyes and nose.

3. A length of cotton roll, just covering the teeth to be treated, may be tied in place with the free ends of the ligatures used in retaining the rubber dam.

4. The solution should be agitated with an eye-dropper before wetting the cotton roll, because the two liquids in the formula separate readily. As soon as the liquids are well mixed, the cotton roll may be saturated.

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5. Application of a gentle but steady heat to the saturated cotton roll is suggested as an accelerator. Overheating must be avoided to prevent devitalization.

6. When the cotton roll begins to dry, it is suggested that the two liquids be agitated again and the cotton roll resaturated.

Five cubic centimeters of hydrogen dioxide and 1 cc. of ether are the quantities used. This generally lasts about half an hour.

In this treatment, only the stain is removed: the mottling itself remains. In no case treated has there been a recurrence of stain.

Medical Relations

Bronchoscopy

[The Indications for Bronchoscopy, By Chevalier L. Jackson, Philadelphia. Clinical Medicine and Surgery, 44:433 (October) 1937.]

The bronchoscope is simply a bronchial speculum [an appliance for opening to view a passage or cavity of the body] which is used as an aid in both diagnosis and treatment. The use of the bronchoscope confirms the interpretations of the roentgenogram. It was originally developed for the removal of foreign bodies [and this purpose is still of prime concern to the dentist], but its use has been widely extended for diagnosis and treatment of disease conditions related to the thorax.

Indications for Bronchoscopy

1. *Bronchial Obstruction* — The most urgent indication for bronchoscopy is physical or roentgenographic evidence of bronchial obstruction. Such evidence may be (a) obstructive atelectasis [partial collapse of the lung]; (b) obstructive emphysema [presence of air in alveolar tissue of lungs]; (c) a wheeze; (d) productive cough; (e) hemoptysis [spitting of blood]; (f) dyspnea which is not laryngeal nor due to a disorder of the blood chemistry.

2. *Foreign Bodies*—The technique of bronchoscopic methods for the extraction of foreign bodies has continued to be developed to such a point

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that few such obstructions now present a mechanical problem impossible of solution. "Costophrenic bronchoscopy," guided by the biplane fluoroscope, has made it possible to extract opaque foreign bodies, such as pins [and dental appliances], from the most peripheral portions of the lung, and with the aid of various special forceps, almost any object may be removed from the bronchus in which it is lodged.

3. *Tumors, Benign and Malignant*—Tumors of the bronchus may give rise to the same symptoms produced by brochial obstruction. When a tumor has been diagnosed by bronchoscopic biopsy, it may be treated by endoscopic methods, either by forceps or by bronchoscopic electrocoagulation. When biopsy shows the tumor to be malignant, radon seeds may be implanted, provided radical surgery is not advised, or is refused by the patient. Often bronchoscopic aspiration of a complicating suppurative lesion is of definite palliative value. A thoracic surgeon should be consulted. Progress in radical techniques is steadily decreasing the mortality rate.

4. *Asthma*—The bronchoscopist and the allergist must cooperate in the treatment of this condition. Bronchoscopic aspiration is often beneficial. Autogenous vaccines, prepared from bronchoscopically aspirated specimens are of value in some cases.

5. *Postoperative Atelectasis*—Massive collapse of the lung after an operation is the most dramatic condition the bronchoscopist is called upon to treat. A bronchoscope is slipped into the obstructed bronchus and a quantity of viscid secretions are aspirated. Usually one treatment is sufficient to relieve the patient.

6. *Bronchitis*—Proper treatment of chronic bronchitis by bronchoscopic aspiration at intervals is probably prophylactic of bronchiectasis in some cases.

7. *Bronchiectasis*—Dilatation of the bronchus is marked by fetid breath and paroxysmal coughing, with expectoration of mucopurulent matter. Bronchoscopic aspiration is frequently palliative and is definitely of value as a preliminary to lobectomy.

8. *Pulmonary Abscess* — Patients with pulmonary abscess require the treatment of the internist, the thoracic surgeon, and the bronchoscopist, working in consultation. In this, the aid of the roentgenologist is likewise

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invaluable. Diagnostic bronchoscopy is necessary to exclude the possibility of foreign body, stenosis, or tumor.

9. *Empyema*—Bronchoscopy is indicated to exclude the presence of bronchial obstruction, but external, surgical drainage is imperative.

10. *Tuberculosis*—There is no longer any hesitation in performing bronchoscopies on tuberculous patients, provided the larynx is not involved. Bronchial stenosis is fairly common in tuberculosis and in such cases bronchoscopic dilatation and aspiration are indicated. Diagnostic bronchoscopy may make it possible to secure a specimen of bronchial secretions or tissue from the bronchus which will show tubercle bacilli and confirm the diagnosis when sputum examinations may be negative.

DENTAL MEETING *Dates*

Greater New York Dental Meeting, thirteenth annual meeting, Hotel Pennsylvania, New York, N. Y., December 6-10.

•

Alpha Omega Fraternity, thirtieth annual international convention, Congress Hotel, Chicago, December 29-31.

•

Dallas Midwinter Dental Clinic, eleventh annual meeting, Adolphus Hotel, Dallas, Texas, January 17-19.

•

The District of Columbia Dental Society will again act as host to the Five State Post Graduate Clinic, Mayflower Hotel, Washington, D. C., March 6-9, 1938.

•

Alabama Dental Association, sixty-ninth annual meeting, Tutwiler Hotel, Birmingham, April 11-13.

•

Tennessee State Dental Association, seventy-first annual meeting, Hotel Patton, Chattanooga, May 9-12.

•

Swampscott Convention, New Ocean House, Swampscott, Massachusetts, June 13-15.